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REMARKS

The present Amendment is being submitted prior to expiration of the three months suspension period, which began in connection with the filing of a Request for Continued Examination (RCE) Transmittal and a Submission pursuant to 37 C.F.R. 1.114, on December 21, 2005. At that time, a request was made to suspend further action for a period of three(3) months along with the payment of the appropriate fee directed thereto. Accordingly, applicants respectfully request that prosecution be reopened for the purpose of admitting the present Amendment as a Supplementing (Preliminary) Amendment. It is also requested that a new (supplementing) first Official Action on the merits including an action on both the previously allowed claims 11 – 14 and the newly presented claims 15 – 24 be formally issued. In this regard, enclosed herewith is a paper entitled Letter Requesting Withdrawal of Office Action Issued During Suspension of Action Period.

By the above made amendments, claims 11 – 24 are now pending of which claims 15 – 24 are newly presented. Incidentally, Applicants note with appreciation the allowance of claims 11 – 14, which claims were a re-presenting of the earlier indicated allowable subject matter in a self-contained format (see the remarks on page 10 of the Submission filed on December 21, 2005). New claims 15 – 24 are inclusive of subject matter previously contained in the now cancelled claims 1 – 10. Adjustments were made in these claims for purposes of enhancing the clarity thereof as well as to further highlight various originally disclosed inventive aspects including in a manner which defines over the art documents such as previously applied in the final rejections.

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Newly presented base claim 15 sets forth a direct-conversion transmission circuit comprising first and second mixers; first and second low-pass filters; first and second gain/bias adjusters; and a first phase shifter, the direct-conversion transmitting circuit being such that:

“wherein high frequency output terminals of said first and second mixers are connected to each other,

wherein an output terminal of said first low-pass filter is directly connected to an input terminal of said first mixer, and an input terminal of said first low-pass filter is connected to an output terminal of said first gain/bias adjuster to suppress a noise generated by said first gain/bias adjuster,

wherein an output terminal of said second low-pass filter is directly connected to an input terminal of said second mixer, and an input terminal of said second low-pass filter is connected to an output terminal of said second gain/bias adjuster to suppress a noise generated by said second gain/bias adjuster,

wherein a first output terminal of said first phase shifter is connected to a local signal input terminal of said first mixer, and a second output terminal of said first phase shifter is connected to a local signal input terminal of said second mixer,

wherein an input signal generated from an output signal of a first AD converter is applied to an input terminal of said first gain/bias adjuster to reduce difference in gain and bias levels between an input signal of said first mixer and an output signal of said first AD signal of said first AD converter, and

wherein an input signal generated from an output signal of a second AD converter is applied to an input terminal of said second gain/bias adjuster to reduce difference in gain and bias levels between an input signal of said second mixer and an output signal of said second AD converter.”

An example of a direct-conversion transmitting circuit according to that set forth in claim 15 can be seen with regard to the example illustration in Fig. 1 of the drawings as well as in connection with other disclosed example embodiments,

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although not to be construed as being limited thereto. In this regard, the featured mixers 101 – 102 of modulator 106, low pass filters 130 – 131, attenuators 103 – 104 which feature a shift function of a bias level and AD converters (ADC) as well as the phase shifter 100 are example showings of the set forth first and second mixers, first and second low-pass filters, first and second gain/bias adjusters and the set forth first phase shifter of the invention according to base claim 15.

Consistent with the invention according to claim 15, the example embodiment 1 such as shown in Figs. 1+ of the drawings is configured so that the local signals which are mutually shifted 90 degrees are applied to the mixers 101 and 102 of the modulator via the phase shift circuit 100. Consistent with claim 15, the outputs of the low-pass filters 130 – 131 are respectively directly connected to the inputs of the mixers 101 – 102, the outputs of the gain/bias circuits 103 – 104 are connected to the inputs of the low-pass filters 130 – 131 and, further, the input signals that are generated from the output signals of the ADCs 402 – 403 are applied to the inputs of the gain/bias circuits 103 – 104, respectively. With regard to a schemed construction shown in Figs. 1+, gain/bias circuits 103 – 104 reduce existing differences in the gain and bias levels between that of the output signals of the ADCs 402 – 403 and the input signals of the mixer circuits 101 – 102. Also, the placement of the low pass filters 103 – 131 in the manner called for in independent claim 15 and as shown in the embodiments suppresses noise generated by the respective gain/bias circuits 103 – 104 (see the discussion on page 10, lines 1 – 8 as it relates to the gain/bias level adjustments associated with the attenuators 103 – 104, etc., as well as page 11, lines 18 – 22, as it relates to the placement of the low pass filters 130 – 131, etc., of the Specification).

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Claim 16 (dependent on claim 15) limits the phase shifter to one comprised of a frequency divider circuit, an example of which is shown in Fig. 10+ (e.g., see 1001), although not limited thereto. Regarding claim 17 (dependent on claim 15), an example showing of a low-pass filter of at least a second order can be seen with regard to Figs. 10, 13 – 14, although not limited thereto. In Fig. 10, for example, the block 130 contains a second order Sallen-Key type active low-pass filter. With regard to claim 18 (dependent on claim 17), an example showing thereof can be seen with regard to the embodiment illustrated in Fig. 10 of the drawings, which is discussed beginning on page 18, line 3, of the Specification, although not to be construed as being limited thereto. Likewise, concerning the set forth featured aspects according to claim 19 (dependent on claim 17), the example embodiment shown in Fig. 13 of the drawings, which is discussed beginning on page 21, second paragraph, of the Specification, although not limited thereto, is related thereto.

Regarding claims 20 and 21, both of which are dependent on claim 15, example showings thereof are given with regard to the embodiments illustrated in Figs. 11 and 12 of the drawings, respectively, although not to be construed as being limited thereto. Regarding claims 22 – 24, example showings thereof are given with regard to the illustrated embodiments in Figs. 15 – 16, although not to be construed as being limited thereto (related discussion is found beginning on page 23, the second paragraph thereof, of the present Specification). The first and second mixers relate to mixers 101 and 102 of modulator 106 of the transmitting portion while mixers 1510 and 1511 relate to the third and fourth mixers, related to the receiving portion of the transceiver. Also, the recited “fourth low noise amplifier “ as it relates

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to claim 24 can be seen with regard to low noise amplifier 1700 shown in the example embodiment of Fig. 17, although not limited thereto.

It is submitted, the invention as now set forth in claims 15 – 24 is a clear patentable improvement over that previously known including defining over the art documents applied in the previously standing rejections. Present claims 15, 16 and 17 are significantly modified from that previously contained in original claims 1 – 3, respectively. This should be clearly apparent from the above discussion of the same. Present claims 18 – 24, it is submitted, likewise contain allowable subject matter contained in allowable claims 11-14 and existed earlier in claims 4 – 10 (now cancelled).

It is submitted, none of the cited references in the previously standing rejections disclosed or suggested a direct-conversion transmitting circuit which is configured as that according to base claim 15 or, for that matter, according to any of the corresponding dependent claims thereof. For example, the featured aspects directed to the first and second gain/bias adjusters (e.g. 103, 104 in the drawings) which reduce difference in gain and bias levels between the respective input signals of the mixers (e.g., 101, 102) and output signals of the AD converters (e.g., 402, 403) and, also, the featured aspects pertaining to the low-pass filters (e.g. 130, 131), in which the output terminals thereof are directly connected to the inputs of the mixers and the input terminals thereof are connected to the outputs of the first and second/gain bias adjusters to suppress noise generated by the gain/bias adjusters (e.g., 103, 104 in Fig. 1, etc.), it is submitted, were not taught by any of the previously cited references nor, for that matter, could have been suggested over their combined teachings.

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Baldwin, et al. (U.S. Publication No. 2002/0042256 A1) disclosed a configuration employing low-pass filtering between the DA converter and the mixer (e.g., see LPF 219,221 in Fig.2). Such is also featured in Zamat, et al. (U.S. Patent No. 5,896,421). However, neither Baldwin, et al. nor Zamat, et al. disclosed or suggested a configuration as that presently called for in claim 15 and further according to the corresponding dependent claims thereof, in which the gain/bias circuit is configured (in the direct-conversion transmitting circuit) to reduce the difference in gain/bias levels between the output signal of the DA converter and the input signal of the mixer and in which the input side of the low pass filter (LPF) is connected to the gain/bias circuit (e.g., 103, 104 in Fig. 1, 506, 507 in Fig. 5, etc.).

Yochem (U.S. Publication No. 2002/0137487 A1) disclosed a configuration in which the input of the filter 108 is connected to a voltage controlled attenuator (e.g., VCA 106). It is noted, however, VCA 106 is connected to the output side of both mixers 120 and 122 and, moreover, is not connected between the DA converters (e.g., D/A 136, 138) and the mixers (e.g., 120, 122). It is submitted, according to Yochem's scheme, the VCA 106 does not function to reduce the difference in gain/bias levels between the output signals of the D/As 136, 138 and the input signals of the mixers 120, 122. Also, it is noted that the filter 108, in Yochem, does not correspond to a low-pass filter for suppressing noise generated by the gain/bias circuit reducing the difference in gain and bias levels. It is submitted, therefore, Yochem neither disclosed nor suggested a schemed configuration according to that set forth in claims 15+ and as that shown in connection with various disclosed embodiments of the present application, which are applicable thereto, although not to be construed as being limited thereto. Using the embodiment shown in Fig. 1,

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etc., of the present application, to highlight this, Yochem failed to teach a scheme that would correspond to the gain/bias circuits 103, 104 which reduce the difference in gain/bias levels between the output signals of the ADCs 402, 403 and the input signals of the mixer circuits 101, 102 and a configuration regarding the placement of low-pass filters 130, 131 to suppress noises generated by the gain/bias circuits 103, 104. It is also apparent that the invention according to claim 15 and also, according to the corresponding dependent claims thereof could not have been realizable even over the combined teachings of the above cited references.

Atkinson (U.S. Patent No. 6,731,923) was cited in connection with the alleged teaching therein of a phase shifter composed of a frequency divider circuit. Younis, et al. (U.S. Patent No. 6,721,368) was cited as, allegedly, teaching a low-pass filter that is of the second order type. However, like Baldwin, et al., Yochem, and Zamat, et al., Atkinson and Younis, et al. are also deficient in terms of the configuration of a direct-conversion transmitting circuit as that presently called for. In fact even if one of ordinary skill would have considered all of these references in combination, the invention according to claims 15-24 still could have been rendered obvious when considering at least the above noted deficiencies.

Therefore, for at least the above reasons, a re-affirmation of allowance claims 10 – 14 as well as favorable action on the newly presented claims 15 – 24 together with an early formal notification of allowance of the above-identified application is respectfully requested.

To the extent necessary, Applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to the Antonelli, Terry, Stout & Kraus,

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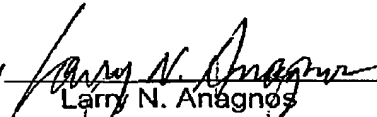
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LLP Deposit Account No. 01-2135 (Docket No. 843.41127X00), and please credit any excess fees to such deposit account.

Respectfully submitted,

ANTONELLI, TERRY, STOUT & KRAUS, LLP

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